Quo vadis, hair cell regeneration?

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Public Summary:
Hearing loss is a global health problem with profound socioeconomic impact. We contend that acquired hearing loss is mainly a modern disorder caused by man-made noise and modern drugs, among other causes. These factors, combined with increasing lifespan, have exposed a deficit in cochlear self-regeneration that was irrelevant for most of mammalian evolution. Nevertheless, the mammalian cochlea has evolved from phylogenetically older structures, which do have the capacity for self-repair. Moreover, nonmammalian vertebrates can regenerate auditory hair cells that restore sensory function. We will offer a critical perspective on recent advances in stem cell biology, gene therapy, cell cycle regulation and pharmacotherapeutics to define and validate regenerative medical interventions for mammalian hair cell loss. Although these advances are promising, we are only beginning to fully appreciate the complexity of the many challenges that lie ahead.

Scientific Abstract:
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